

## Analysis of Clinical Outcomes and Prognostic Factors in Bosworth Fractures

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**Category:** Trauma

**Keywords:** Ankle, Bosworth fracture, Outcome, Prognostic Factor

**Introduction/Purpose:** Unlike routine ankle fractures, Bosworth fracture-dislocation lead to devastating complication such as compartment syndrome, neurovascular injury, and subsequent ankle OA more frequently. However, due to the low incidence of this injury, no study have reported clinical outcomes of Bosworth fracture in comparison to which of routine ankle fractures or these prognostic factors. Therefore this study was performed to assess and compare the outcomes of Bosworth fracture-dislocation to that of routine ankle fractures and understand the prognostic factors in order to prevent the irreversible and severe status.

**Methods:** Twelve patients were followed for more than 1 years after surgical management for Bosworth fracture-dislocation. The mean age was 39.2 years, and the mean follow-up period was 38.4 months. All patients were treated with ORIF including syndesmosis fixation.

The clinical evaluation consisted of the AOFAS ankle-hindfoot score, Olerud & Molander scale. Reduction of tibiofibular syndesmosis and restoration of the ankle mortise were evaluated with plain radiographs and 3-D CT. The clinical and radiological outcomes were compared to those of routine ankle fractures (50 patients). To detect prognostic factors affecting the clinical results, age, fixation methods, interval to operation, existence of post. malleolar fracture, shape of fibular fracture, number of syndesmotic screw, frequency of closed reduction trial were studied.

**Results:** Clinical results of Bosworth fracture-dislocation showed improvement including AOFAS score (87.6 on average) and Olerud and Molander scale (89.7 on average), and corresponded to those results of routine ankle fracture ( $p = 0.234$ ). All the patients achieved union in 12.6 weeks on average. However, postoperative CT revealed syndesmotic diastasis in 5 of 12 cases. As complication, there were two cases of compartment syndrome, 2 cases of posttraumatic OA, 2 cases of ankle stiffness. Interval to operation and frequency of closed reduction trial were found to be predictive factors of poor outcomes ( $p = 0.003, 0.011$  respectively).

**Conclusion:** The results of our study showed that although the clinical results were comparable statistically, Bosworth fracture are more frequently associated with the development of complications than routine ankle fractures. More specifically, prolonged interval between occurrence of fracture and surgical fixation and repeated attempts of closed reduction are at risk for poor outcomes. A prospective study with sufficient power would be needed to further identify risk factors associated with complications.